

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of claims 1-9, 11-13 and 20-23 in the reply filed on 12/15/09 is acknowledged.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 3, 5, 8, and 11-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Sikharulidze US Patent No. 6970211.

Regarding claims 1 and 2, Sikharulidze teaches a light control material, comprising a base layer (fig. 1 element 1 bottom) oriented in a uniaxial direction, a center layer comprising a skeletal layer (3) and a plurality of cavities (see fig. 1 and 2) arranged in parallel to the uniaxial direction of the surface layer (fig. 1 element 1 top) and the base layer and liquid crystal material at least partially filling the cavities (see figs 1 and 2).

Regarding claim 3 and 8, Sikharulidze teaches one or both of the surface layer and base layer are substantially transparent to light (glass substrates see fig. 1 element 1).

Regarding claim 5, Sikharulidze teaches each of the surface layer and base layer comprise one or more electrodes adapted for application of an electrical potential to the liquid crystal material (see fig. 1 element 2 top and bottom).

Regarding claim 11, Sikharulidze teaches the length: pitch of the cavities is approximately 1:2 (see fig. 2).

Regarding claims 12-13, Sikharulidze teaches the depth (fig. 2 element 6) is roughly 200 or 400 nm (see column 5 line 62)which is roughly equal to the length (fig. 2 element 5). Pitch is approximately double the length thus the corresponding pitch would be 400 or 800 nm which all fall directly in the claimed ranges.

Claims 20-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Shaver US 4256787.

Regarding claim 20, Shaver teaches a light-control material, comprising: a surface layer that transmits light (fig. 3 element 21), base layer that transmits light (20 the base layer being laid above the surface layer; a liquid crystal layer (29) hat is arranged with one layer between the surface and the base layer and skeletal members (25-26) that arranged in the liquid crystal, the skeletal members being oriented in parallel to the uniaxial direction of the surface layer so that cavities are formed between each skeletal member, wherein the skeletal members forms a lamination structure in the liquid crystal.

Regarding claim 21, Shaver teaches the plurality of lamination structures are formed with the skeletal members in the liquid crystal, the skeletal members are arranged in one lamination structure have a different uniaxial direction of the surface layer from the other skeletal members which are arranged in other lamination structure (see fig. 1-5 elements 25-26).

Regarding claims 22-23, MPEP 2106 states: *“Language that suggests or makes optional but does not require steps to be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation.”* The limitation of using the light control device as a window glazing or vehicle window glazing does not impart additional structural limitations.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sikharulidze in view of Sasaki US 6288762

Regarding claims 4 and 7, Sikharulidze teaches all the limitations of claims 4 and 7 except a liquid crystal transmittance of over 70%. Sasaki teaches liquid crystal of transmittance 90% under an applied electric field. This improves efficiency as less light/energy goes into the liquid crystal. Therefore, at the time of the invention,

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one of ordinary skill in the art would apply liquid crystal greater than 70% for greater efficiency.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sikharulidze.

Regarding claim 6, Sikharulidze does not explicitly state that the electric potential is derived from an applied electric field oriented parallel to the uniaxial direction of the surface layer however, Sikharulidze does teach a surface layer oriented the same way as the application and similarly sized and shaped electrodes as the current application (see figs 1-2) therefore it would be obvious that the applied electric field would be oriented parallel to the uniaxial direction of the surface layer. If this limitation comes from another structural limitation than it is not apparent from a reading of applicant's specification.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sikharulidze in view of Sahouani et al US 6564944.

Sikharulidze teaches all the limitations of claim 9 except the surface layer and base layer comprise polymer films. Sahouani teaches that polymer films as a flexible alternative to rigid glass (see column 5 line 24). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to apply a polymer base and surface layers to gain additional flexibility.

Conclusion

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHU VU whose telephone number is (571)272-1562.

The examiner can normally be reached on 8AM-5PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Phu Vu/
Examiner, Art Unit 2871